

I claim:

1. An adjustable continuous recycle filtration system, comprising:

- (a) a filter;
- (b) means for conveying a fluid to the filter;
- (c) means for recycling a portion of the fluid to the filter; and
- (d) means for controlling the proportion of the fluid which is recycled to the filter by controlling the size of an orifice in a passageway through which the fluid flows.

2. The filtration system of claim 1, wherein the means for controlling the size of the orifice include an orifice restriction.

3. The filtration system of claim 2, wherein the orifice restriction is variable, thereby providing a range of proportions of the fluid which is recycled to the filter.

4. The filtration system of claim 2, wherein the orifice restriction is continuously variable, thereby providing a continuous range of proportions of the fluid which is recycled to the filter.

5. The filtration system of claim 2, wherein the orifice restriction includes a valve, thereby providing a range of proportions of the fluid which is recycled to the filter.

6. The filtration system of claim 2, wherein the orifice restriction includes a needle valve, thereby providing a continuous range of proportions of the fluid which is recycled to the filter.

7. A continuous split-stream bypass filtration system, the system comprising:

- (a) a filter;
- (b) a first passageway (7) which provides an inlet passageway for a fluid to be conveyed to the filter or to be discharged from the system;
- (c) a second passageway (11) which provides a passageway for fluid discharged from the filter;
- (d) a third passageway (8) connected to the first passageway (7) and to the filter;
- (e) a fourth passageway (9) interconnecting the first (7) and second (11) passageways;
- (f) an orifice restriction disposed in the fourth passageway, for controlling the size of an orifice in the fourth passageway (9); and
- (g) a fifth passageway (12) for discharging fluid from the fourth passageway (9);

whereby the fluid discharged from the second passageway (11) is split into a first stream flowing through the third passageway (8) to the filter and a second stream flowing through the fourth passageway (9) to be discharged through the fifth passageway (12), the proportion of the fluid which is routed to the filter or which is discharged through the fifth passageway (12) being controlled and determined by the size of the orifice in the fourth passageway (9).

8. A continuous split-stream bypass filtration system, comprising:

- (a) a filter;
- (b) a first passageway (7) for conveying a fluid to the filter;
- (c) a second passageway (11) for discharging fluid from the filter;
- (d) means for lowering the pressure in the second passageway (11) below the pressure in the first passageway (7);

- (e) a third passageway (8) connecting the first passageway (7) and the filter to one another;
- (f) a fourth passageway (9) connected to the first (7) and third (8) passageways;
- 15 (g) a fifth passageway (12) for discharging the fluid from the fourth passageway (9); and
- (h) an orifice restriction (3) disposed in the fourth passageway (9), for controlling the rate of flow of the fluid through the third (8), fourth (9), and
- 20 fifth (12) passageways;

the pressure-lowering means being disposed between the fourth (9) and fifth (12) passageways, the second passageway (11) interconnecting the pressure-lowering means (2), the filter, and the fourth passageway (9), the first (7), second (11), third (8), fourth (9), and fifth (12) passageways, the pressure-lowering means (2), and the orifice restriction (3) being constructed and arranged so that fluid discharged from the first passageway (7) is partitioned into a first stream flowing through the third passageway (8) and a second stream

25 flowing through the fourth passageway (9), and the proportion of the fluid which is routed to the filter or is discharged from the system is controlled and determined by the size of an orifice in the orifice restriction (3) disposed in the fourth passageway (9).

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9. A continuous split-stream bypass filtration system, comprising:

- (a) a filter;
- (b) a first passageway (7) for conveying a fluid to the filter;
- 05 (c) a second passageway (11) for discharging the fluid from the filter;
- (d) means (2) for lowering the pressure in the second passageway (11) below the pressure in the first passageway (7);
- 10 (e) a third passageway (8) connecting the first passageway (7) and the filter to one another;

(f) a fourth passageway (9) connected to the first (7) and third (8) passageways; and

15 (g) a fifth passageway (12) for discharging the fluid from the fourth passageway (9);

the pressure-lowering means (2) being disposed between the fourth (9) and fifth (12) passageways, the second passageway (11) interconnecting the pressure-lowering means (2), the 20 filter, and the fourth passageway (9); the first (7), second (11), third (8), fourth (9), and fifth (12) passageways, and the pressure-lowering means (2) being constructed and arranged so that fluid discharged from the first passageway (7) is partitioned into a first stream flowing through the 25 third passageway (8) and a second stream flowing through the fourth passageway (9), and the proportion of the fluid which is routed to the filter or is discharged from the system is controlled and determined by the sizes of orifices in the third (8) and fourth (9) passageways.

10. An adjustable recycle filtration system, comprising:

(a) a filter;

(b) a first passageway (7) which provides an inlet passageway for a fluid to be conveyed to the 05 filter;

(c) a second passageway (11) which provides a passageway for fluid discharged from the filter;

(d) means (2) for lowering the pressure in the second passageway (11) below the pressure in the first 10 passageway (7);

(e) a third passageway (15) connected to the pressure-lowering means (2);

(f) a fourth passageway (8) connected to the third passageway (15) and to the filter;

15 (g) a fifth passageway (9) interconnecting the third (15) and fourth (8) passageways; and

(h) an orifice restriction (3) disposed in the third passageway (8), for controlling the rate of flow through the fourth (8) and fifth (9) passageways;

20 the first (7), second (11), third (15), fourth (8), and  
fifth (9) passageways, the pressure-lowering means (2), and  
the orifice restriction (3) being constructed and arranged  
so that fluid discharged from the third passageway (15) is  
split into a first stream flowing through the fourth  
25 passageway (8) and a second stream flowing through the fifth  
passageway (9), and the proportion of the fluid which is  
recycled to the filter before being discharged through the  
fifth passageway (9) is controlled and determined by the  
size of an orifice in the orifice restriction (3) disposed  
30 in the third passageway (8).

11. The continuous bypass filtration system of claim 8,  
wherein the direction of fluid flow through the filter is  
reversible.

12. The continuous bypass filtration system of claim 9,  
wherein the direction of fluid flow through the filter is  
reversible.

13. The adjustable recycle filtration system of claim 10,  
wherein the direction of fluid flow through the filter is  
reversible.

14. A method for controlling the proportion of a fluid  
which is routed to the filter of a filtration system, and  
the proportion of said fluid which is discharged from the  
system without passing through the filter, the method  
05 comprising the steps of:  
    (a) providing a filter for filtering the fluid;  
    (b) conveying a portion of the fluid to the filter  
        through a first passageway;  
    (c) discharging a portion of the filtered fluid and a

10 portion of the unfiltered fluid through a second  
passageway; and

(d) controlling the proportions of the fluid flowing  
through the first and second passageways by  
disposing an orifice restriction in the first  
15 passageway.

15. A method for controlling the proportion of a fluid  
which is routed to the filter of a filtration system, and  
the proportion of said fluid which is discharged from the  
system without passing through the filter, the method  
05 comprising the steps of:

- (a) providing a filter for filtering the fluid;  
(b) conveying a portion of the fluid to the filter  
through a first passageway;  
(c) discharging a portion of the filtered fluid and a  
10 portion of the unfiltered fluid through a second  
passageway; and  
(d) controlling the proportions of the fluid flowing  
through the first and second passageways by  
disposing an orifice restriction in the second  
5 passageway.

16. A method for controlling the quality of a fluid which  
is to be purified, the method comprising the steps of:

- (a) providing a filter for filtering the fluid;  
(b) conveying a portion of the fluid to the filter  
05 through a first passageway;  
(c) discharging a portion of the filtered fluid  
and a portion of the unfiltered fluid through  
a second passageway;  
(d) controlling the proportions of the fluid flowing  
10 through the first and second passageways;

- 15 (e) analyzing the fluid discharged through the second  
passageway;
- (f) increasing the proportion of the fluid which is  
conveyed to the filter through the first  
passageway if the quality of the discharged fluid is  
below industry standards; and
- 20 (g) decreasing the proportion of the fluid which is  
conveyed to the filter through the first  
passageway if the quality of the discharged fluid  
is appreciably above industry standards.

17. The filtration system of claim 8, wherein the pressure-  
lowering means include an ejector.

18. The filtration system of claim 9, wherein the pressure-  
lowering means include an ejector.

19. The filtration system of claim 10, wherein the pressure-  
lowering means include an ejector.

20. The method of claim 16, wherein the fluid is a cooking  
fat or a cooking oil.